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Claims

1. A method of operating a system for analysing the condition of a machine having a
rotating shaft (8) and a measuring point (12); the system comprising a client part (4,
10   14, 19), a supplier part (20, 28) and means for exchanging information between said
client part and said supplier part (20, 28); said client part comprising:

at least one sensor (10) attachable on or at said measuring point (12) for
generating said measurement data dependent on rotation of said shaft; and

an analysis apparatus (14) connectable to said at least one sensor for analysing
15   the condition of the machine on the basis of said measurement data; said analysis
apparatus (14) having

a data processing means for processing condition data dependent on said
measurement data; said data processing means comprising means for performing a
plurality of condition monitoring functions (F1, F2, Fn); wherein at least one of said
20   plurality of condition monitoring functions (F1, F2, Fn) is a restricted function
having a disabled state and an enabled state; said disabled state prohibiting complete
execution of said condition monitoring function; and said enabled state allowing
execution; wherein the apparatus is arranged to allow a limited amount of use of the
at least one restricted condition monitoring function; and

25   a logger for registering use of said at least one restricted condition
monitoring function (F1, F2,Fn); wherein

the apparatus is arranged to change the state of a restricted condition
monitoring function from the enabled state to the disabled state when said registered
use indicates that the limited amount of use has been spent;

30   a communication port (16) coupled to said data processing means;

a user interface (102, 106, 103, 182) coupled to said data processing
means for enabling user interaction;

the method comprising:

displaying a list of available functions via a user interface (102, 106, 103,

104, 182) with an indication about status for the displayed functions (S120);

allowing a user to request for an additional amount of use of at least one

restricted condition monitoring function (S130);

generating a request for an additional amount of usage of said at least one

restricted condition monitoring function (S140, S470) so that said request includes

information indicative of said at least one restricted condition monitoring function

and/or so that said request includes information indicative of said analysis apparatus;

supplying said request on said communication port (16) for delivery to said

supplier part (20, 28);

receiving said request at said supplier part (S480, 20, 28);

establishing, at said supplier part (20, 28), whether to grant said request ;

delivering, from said supplier part (S530, 20, 28), a key associated with

an additional amount of use of at least one restricted condition monitoring function

when said establishing step results in a grant of said request (S180);

receiving said key at said client part (S540, 4, 14, 19);

performing a key verification procedure at said client part (S200, S550,

560, 570, 4, 14, 19);

causing said client part analysis apparatus (14) to change a parameter

controlling an amount of allowed use in response to said received key code when

said key verification procedure results in an acceptance of said received key (S220,

S590).

2. . The method according to claim 1, wherein

said request is generated so that it includes information indicative of a desired

additional amount of usage and information indicative of said at least one restricted

condition monitoring function. and/or information indicative of an identity of said

analysis apparatus.

3. The method according to claim 1 or 2, wherein

5   said request is generated so that it includes information indicative of a desired

additional amount of usage and information indicative of an identity of said analysis

apparatus.

4. The method according to claim 1, 2 or 3, wherein

10   said key is generated so that it comprises information resulting from a

calculation involving information in said request.

5. The method according to claim 1, 2, 3 or 4, wherein

said key is generated so that it comprises information resulting from a

15   calculation involving information identifying said at least one restricted condition

monitoring function and/or information indicative of an identity of said analysis

apparatus.

6. The method according to any of claims 1 - 5, wherein

20   said request is generated so that it includes payment information.

7. The method according to any of claims 1 - 6, wherein

said key is generated so that it comprises information which is at least partly

encrypted.

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8. The method according to any of claims 1 - 7, wherein

said request is generated by means of user interaction involving a user

interface (102, 106, 103, 104, 182) coupled to said data processing means.

30   9. The method according to any of claims 1 - 8, further comprising the step of

requesting a user to enter a key code associated with at least one of said

condition monitoring functions.

10. The method according to any of claims 1 - 8, wherein

5   said key code is received via said communication port (16) when connected to

.a .communications network (18).

11. The method according to any of claims 1 - 10, wherein

          said key code is delivered from said supplier part (20, 28) by means of a

10   communications network (18).

12. The method according to claim 10 or 11, wherein

          communications network (18) comprises a public switched telephone

network and/or the Internet.

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13. A system for analysing the condition of a machine having a rotating shaft (8) and

a measuring point (12); the system comprising a client part connectable to a

communications network (18) for communication with a supplier part (20); said

client part comprising:

20   at least one sensor (10) attachable on or at said measuring point (12) for

generating said measurement data dependent on rotation of said shaft;

          an analysis apparatus (14) for analysing the condition of the machine on the

basis of said measurement data; said analysis apparatus (14) having

                    a data processing means for processing condition data

25   dependent on said measurement data; said data processing means

          comprising means for performing a plurality of condition monitoring

          functions (F1, F2, Fn); and

                    a logger for registering use of at least one of said condition

          monitoring functions (F1, F2,Fn);

30   a communication port (16) coupled to said data processing

          means and connectable to said communications network (18) for

          communication with said supplier part computer (20);

                    a user input/output interface (102, 106, 103, 182) coupled

          to said data processing means for enabling user interaction;

means (50, 60, 70, 80, 132) for generating a request for an amount of usage of at least one of said condition monitoring functions (F1, F2, Fn); said request generating means being actuatable by said user input/output interface (102, 106, 103, 182); wherein

said analysis apparatus (14) is adapted to supply said request to said communication port (16) for delivery to said supplier part computer (20); (18);

means (50, 60, 70, 80, 132, 16) for receiving a key associated with at least one of said condition monitoring functions;

means (50, 60, 70, 80, 132, 16) for performing a key verification procedure;

means (50, 60, 70, 80, 132, 16) for causing said analysis apparatus (14) to change a parameter controlling an amount of allowed use in response to said received key code when said key verification procedure results in an acceptance of said received key code.

14. The system according to claim 13, further comprising

means for causing said analysis apparatus (14) to display a list of condition monitoring functions with an indication of whether an individual condition monitoring function is disabled or enabled.

15. The system according to claim 13 or 14, further comprising

means for causing said analysis apparatus (14) to enable a user to buy usage of a selected condition monitoring function (S130).

16. The system according to any of claims 13 - 15, wherein

said at least one input includes an input adapted to receive shock pulse measurement data; said adapted input comprising means for treatment of said shock pulse measurement data and delivery of said treated data to said data processing means.

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17. The system according to any of claims 13 - 16, wherein

said plurality of condition monitoring functions (F1, F2,Fn) includes
two or three or more functions selected from the group consisting of: vibration
analysis, temperature analysis, shock pulse measuring, spectrum analysis of shock

10   pulse measurement data, Fast Fourier Transformation of vibration measurement data,
graphical presentation of condition data on a user interface, storage of condition data
in a writeable information carrier on said machine, storage of condition data in a
writeable information carrier in said apparatus, tachometering, imbalance detection,
misalignment detection.

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18. The system according to any of claims 13 - 16, wherein
said plurality of condition monitoring functions (F1, F2,Fn) includes a function for
imbalance detection.

20   19. The system according to claim 18, wherein
said plurality of condition monitoring functions (F1, F2,Fn) includes a function for
balancing.

20. The system according to any of claims 13 - 16, wherein

25   said plurality of condition monitoring functions (F1, F2,Fn) includes a function for
misalignment detection.

21. The system according to claim 20, wherein
said plurality of condition monitoring functions (F1, F2,Fn) includes a function for

30   alignment.

22. An apparatus for analysing the condition of a machine having a rotating shaft (8)
and a measuring point (12); comprising:

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at least one input for receiving measurement data from a sensor for
surveying said measuring point of the machine; said measurement data being
dependent on rotation of said shaft;

data processing means for processing condition data dependent on said
measurement data; said data processing means comprising means for performing a
plurality of condition monitoring functions (F1, F2,Fn);

a logger for registering use of at least one of said condition monitoring
functions (F1, F2,Fn); said registration of use affecting a parameter indicative of an
allowed amount of use of said at least one of said condition monitoring functions
(F1, F2, Fn);

a communication port (16) coupled to said data processing means and
connectable to a communications network (18);

means (50, 60, 70, 80, 132, 16) for receiving, on said communication
port (16), a key code associated with at least one of said condition monitoring
functions;

means (50, 60, 70, 80, 132, 16) for performing a key code verification
procedure;

means (50, 60, 70, 80, 132, 16) for causing said analysis apparatus (14)
to change said parameter in response to said received key code when said key
verification procedure results in an acceptance of said received key code.

23. The apparatus according to claim 22, further comprising
means for causing said analysis apparatus (14) to display a list of
condition monitoring functions with an indication of whether an individual condition
monitoring function is disabled or enabled.

24. The apparatus according to any of claims 22 -23, wherein
said at least one input includes an input adapted to receive shock pulse
measurement data; said adapted input comprising means for treatment of said shock

5   pulse measurement data and delivery of said treated data to said data processing

     means.

     25. The apparatus according to any of claims 22 -24, wherein

           said plurality of condition monitoring functions (F1, F2,Fn) includes

10   two or three or more functions selected from the group consisting of: vibration

     analysis, temperature analysis, shock pulse measuring, spectrum analysis of shock

     pulse measurement data, Fast Fourier Transformation of vibration measurement data,

     graphical presentation of condition data on a user interface, storage of condition data

     in a writeable information carrier on said machine, storage of condition data in a

15   writeable information carrier in said apparatus, tachometering, imbalance detection,

     misalignment detection.

     26. The apparatus according to any of claims 22 -24, wherein

           said plurality of condition monitoring functions (F1, F2,Fn) includes a

20   function for imbalance detection.

     27. The apparatus according to claim 26, wherein

           said plurality of condition monitoring functions (F1, F2,Fn) includes a

     function for balancing.

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     28. The apparatus according to any of claims 22 - 27, wherein

           said plurality of condition monitoring functions (F1, F2,Fn) includes a

     function for misalignment detection.

30   29. The apparatus according to claim 28, wherein

           said plurality of condition monitoring functions (F1, F2,Fn) includes a

     function for alignment.

     30. The apparatus according to any of claims 22 - 29, wherein:

5   said logger is adapted to store at least two parameters (Use_F_1, Use_F_2);

    a first one of said at least two parameters being associated with an

amount of use of a first condition monitoring function (F1, F2, Fn), and

    a second one of said at least two parameters being associated with an

amount of use of a second condition monitoring function (F1, F2, Fn).

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31 An apparatus for analysing the condition of a machine having a rotating shaft (8)

and a measuring point (12), comprising:

    at least one input for receiving measurement data from a sensor for

surveying said measuring point of the machine; said measurement data being

15 dependent on rotation of said shaft;

    data processing means for processing condition data dependent on said

measurement data; said data processing means comprising means for performing a

plurality of condition monitoring functions (F1, F2,Fn); and

    a logger for registering use of at least one of said condition monitoring

20 functions (F1, F2,Fn); said registration of use affecting a parameter indicative of an

allowed amount of use of said at least one of said condition monitoring functions

(F1, F2, Fn);

    a user interface (102, 106, 103, 104, 182) coupled to said data

processing means for enabling user interaction;

25   means for causing said user interface (102, 106, 103, 104, 182) to

request a user to enter a key code associated with at least one of said condition

monitoring functions;

    means (50, 60, 70, 80, 132, 16) for receiving a key code associated with

at least one of said condition monitoring functions via said user interface (102, 106,

30 103, 104, 182);

    means (50, 60, 70, 80, 132, 16) for performing a key verification

procedure;

    means (50, 60, 70, 80, 132, 16) for causing said analysis apparatus (14)

to change said parameter controlling an amount of allowed use in response to said

5   received key code when said key verification procedure results in an acceptance of

said received key code.

32. The apparatus according to claim 31, further comprising

means for causing said analysis apparatus (14) to display a list of

10   condition monitoring functions with an indication of whether an individual condition

monitoring function is disabled or enabled.

33. The apparatus according to any of the preceding claims, further comprising

means for causing said analysis apparatus (14) to enable a user to buy usage

15   of a selected condition monitoring function (S130).

34. The apparatus according to any of the preceding claims, wherein

said logger is adapted to register use of a first condition monitoring

function a first rate; and

20   said logger is adapted to register use of a second condition monitoring

function at a second rate.

35. The apparatus according to claim 34, wherein

said second rate is such that use registered at said second rate causes a higher

25   cost per unit of usage than use registered at said first rate.

36. The apparatus according to claim 34, wherein

said second rate is such that use registered at said second rate causes a lower

cost per unit of usage than use registered at said first rate.

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37. The apparatus according to any of the preceding claims, wherein:

said registered use is a parameter indicative of a number of executions of at

least one of said condition monitoring functions (F1, F2,Fn).

5   38. The apparatus according to any of the preceding claims, wherein:

said registered use is a parameter indicative of an extent of time.